August 10, 2006

TO: Members of the MAG Specifications and Details Committee

FROM: Robert Herz, Maricopa County DOT, Chairman

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF AGENDA

Wednesday, September 6, 2006, 1:30 p.m.
MAG Office, Second Floor, Cholla Room
302 North First Avenue, Phoenix

The meeting of the MAG Specifications and Details Committee will be held at the place and time indicated above. The agenda for the meeting is provided below. **Please park in the garage under the Compass Bank Building. Bring your ticket to the meeting, parking will be validated. For those using transit, the Regional Public Transportation Authority will provide transit tickets for your trip. For those using bicycles, please lock your bicycle in the bike rack in the garage.** Please call me at (602) 506-4760 if you have questions about the upcoming meeting.

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AGENDA

ITEM	COMMITTEE ACTION REQUESTED
1. Call to Order	1. No action required.
2. Approval of Aug 2, 2006 Meeting Minutes	2. Corrections and approval of Aug 2, 2006 minutes.
3. 2006 Cases	3. For Review, Discussion, and Voting.
4. General Discussion	4. For information and discussion.
5. Adjournment	5. No action required.

MEETING MINUTES FROM THE
MARICOPA ASSOCIATION OF GOVERNMENTS
STANDARD SPECIFICATIONS AND DETAILS COMMITTEE

August 2, 2006

Maricopa Association of Governments Office, Cholla Room
302 North First Avenue
Phoenix, Arizona

AGENCY MEMBERS

Jim Badowich, Avondale
Steven Borst, Buckeye
David Fern, Chandler
* Mark Weiner, Gilbert
* Greg Rodzenko, Glendale
* Tom Vassallo, Goodyear
Bob Herz, MCDOT, Chairman
Kelly Jensen, Mesa
Jesse Gonzalez, Peoria
Jeff Van Skike, Phoenix (St. Trans.)
* Matthew Woodland, Phoenix (Water)
* Rodney Ramos, Scottsdale
* Don Moseley, Surprise
* James Bond, Tempe

ADVISORY MEMBERS

John Ashley, ACA
Jeff Benedict, AGC
Brian Gallimore, AGC
Peter Kandaris, SRP, Vice Chairman
* Don Cornelison, ARPA
* Don Green, ARPA
Paul R. Nebeker, Independent
William Ast, NUCA
* Dale Phelan, NUCA

MAG ADMINISTRATIVE STAFF

Gordon Tyus

* Members not attending or represented by proxy.

GUESTS/VISITORS

Jeff Hearn, Salt River Materials Group
Stew Waller, Arizona Cement Association

1. Call to Order

Chairman, Bob Herz, called the meeting to order at 1:33 p.m.

2. Approval of Minutes

The members reviewed the July 5, 2006 meeting minutes. Jesse Gonzalez introduced a motion to accept the minutes as shown. Steven Borst seconded the motion. A voice vote of all ayes and no nays was recorded.

3. 2006 Cases

a. **Case 06-01 – Safety Rail addition to Concrete Scupper Detail 206**: Updated revisions to Details 206-1 and 206-2 were handed out by Bob Herz (dated August 2, 2006) that included reinforcement within the curb portion and a new Note 6 on Detail 206-2. Brian Gallimore stated that lateral capacity calculations should be performed to determine if the curb portion is really needed. Jesse Gonzalez noted that load tests could be done to verify anchor capacity on existing scuppers. Bob Herz explained that moment from forces on the rail can be high and anchor bolts within a 4-inch concrete section generally will not resist the resulting prying action, but that other anchorage such as angle irons or weld plates may be more successful in resisting the loads. He proposed to modify the detail to delete the curb portion and include an alternate anchorage method. Members were requested to be prepared to vote on this case at the next meeting.

b. **Case 06-02 – Clarifications to Detail 440**: Revisions to Detail 440-1, 440-2 and 440-3. The committee had no discussion on this item and members were requested to be prepared to vote on this case at the next meeting.

c. **Case 06-03 – Miscellaneous Corrections**: Drafting correction to Details 533-3 and 533-4. The committee had no discussion on this item and members were requested to be prepared to vote on this case at the next meeting.

d. **Case 06-04 – Reduced cement content for Reinforced Concrete Pipe (RCP) mixes, Section 735**: Updated revisions to Section 735 were handed out by David Fern that delete Paragraph 735.4 (C) and renumbered the remaining paragraphs in that section. This change eliminates the minimum cement requirement. With this change the cement content is determined by vendors in compliance with ASTM C-76 requirements. Members were requested to be prepared to vote on this case at the next meeting.

e. **Case 06-05 – Survey Marker revisions to Detail 735**: Revisions to Detail 120-2. The committee had no discussion on this item and members were requested to be prepared to vote on this case at the next meeting.

f. **Case 06-06 – Revisions to Detail 426 Drop Sewer Connections.** Paul Nebeker proposed deleting the specific note reference to Caulder couplings since this coupler is only used with clay pipe connections and cannot be used on other types of pipe. After discussion, the committee agreed that a more generic note such as “Provide connection as required” should be substituted for the existing coupler note. Bob Herz

explained that Section 625.2 should also be modified to reflect the changes to this detail. The committee agreed that it would be beneficial to find out if there are any national specifications for couplings (ASTM, etc.). Members were requested to be prepared to vote on this case (as modified during the discussion) at the next meeting.

g. **Case 06-07 – Add 24-inch wide Mountable Curb & Gutter with Transition View to Detail 220.** Bob Herz proposed renumbering the existing Detail 220 to Detail 220-1 and have the proposed new detail numbered as Detail 220-2. Revise the proposed Mountable Curb & Gutter section to add Roadway Width dimensioning limits as is shown on other existing curb and gutter cross sections, delete the Class "B" Concrete callout since this is identified in Note 4, and identifying the cross section with a description similar to the other cross sections in 220 (title as "Type E" instead of "M-24"). The title Mountable Curb to Vertical Curb Transition be revised to Curb Transition Type E to Type A to not duplicate the title used in Case 06-08. After discussion, the committee also recommended that this cross section and the one proposed for Case 06-08 be combined into a single new detail page with the title revised to be consistent with the title on the existing Detail 220. Members were requested to be prepared to vote on this case (as modified during the discussion) at the next meeting.

h. **Case 06-08 – Add 30-inch wide Mountable Curb & Gutter with Transition View to Detail 220.** Bob Herz proposed renumbering the existing Detail 220 to Detail 220-1 to be consistent with this proposed detail 220-2. Revise the cross section description to be similar to the other cross sections in 220 (title as "Type F" instead of "M-30"). The title Mountable Curb to Vertical Curb Transition be revised to Curb Transition Type F to Type A to not duplicate the title used in Case 06-07. Members were requested to be prepared to vote on this case (as modified during the discussion) at the next meeting.

i. **Case 06-09 – Modify Section View and add Transition View to Detail 221.** Bob Herz proposed adding to the curb and gutter transition notes, Note 4 "Transition between typical sections shall be accomplished by the use of direct straight line transitions of the flow line and other surface features." Members were requested to be prepared to vote on this case (as modified during the discussion) at the next meeting.

4. <u>General Discussion</u>:

a. Jim Badowich discussed his desire to revisit sidewalk ramps next year to remedy field problems experienced with existing details for commercial developments and to decrease the number of city supplements on the subject. Bob Herz also noted that the ramps may need to be modified to meet ADA requirements. It was also noted that this change may be included as part of the specification inventory project presently being performed by the committee's consultant.

b. Kelly Jensen requested that committee members provide him information on member agency's use of precast block truncated domes.

c. Gordon Tyus updated the committee on the Specifications and Details Inventory project. He handed out (for review) a list of agency information collected by the consultant (see attachment). AZ-Flash, LLC has collected most of the agency supplements (these are available for review), is still obtaining electronic versions of specifications in word-processor format (they have all in PDF format), and have started categorizing supplements as they relate to various MAG sections and details. The consultant plans to finish all work at the end of September and issue a summary report in October.

d. Peter Kandaris discussed the need for a preface to the MAG specifications and details that describe the function of the documents. He recently had an experience with a set of consultant plans that referenced the MAG Specifications and Details as would be done with a building code. Paul Nebeker stated that contractors take a great deal of time dealing with this issue as they relate to work in the right-of-way versus on-site building construction.

e. John Ashley noted that the Arizona Cement Association is currently reviewing MAG concrete sections (in particular Section 725) with the intent on proposing revisions next year. Jeff Hearn provided a discussion noting that the MAG sections need to be modernized to include items such as hot and cold weather concreting and use of fibers. The committee noted that help in this area would be appreciated and a number of members offered to provide information from their agencies to assist in this effort.

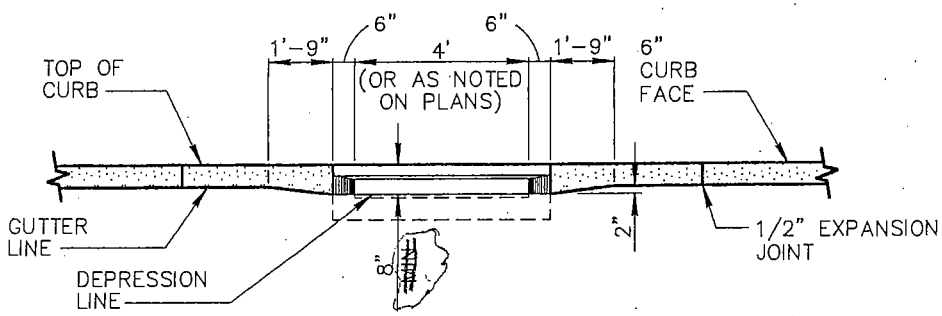
5. Adjournment:

The meeting was adjourned at 3:02 p.m.

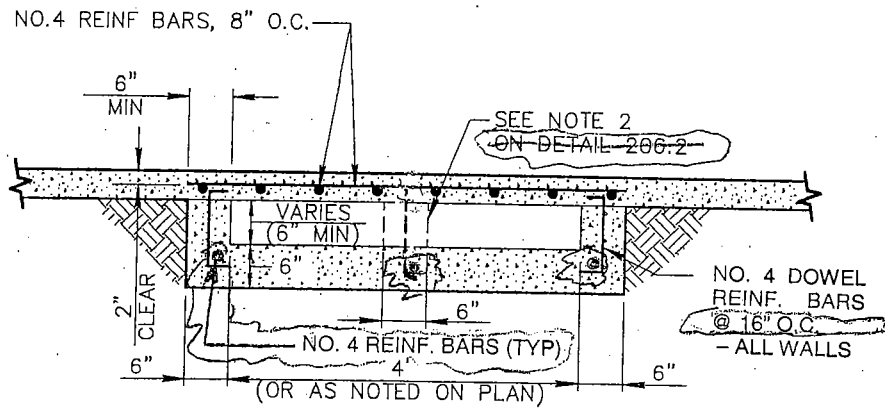
2006 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE
06-01	Safety Rail Addition to Detail 206	MCDOT	Herz	1/04/2006 206-1 8/2/2006 206-2 8/10/2006		Yes No Abstain
06-02	Corrections to Detail 440, Revisions to section 615.6.2 and 615.7.	MCDOT	Herz	2/01/2006 440-1 Rev. 3/01/2006 Specs 4/05/2006		Yes No Abstain
06-03	Miscellaneous Bloopers Case A – Correct Section reference arrows on detail sheets 533-3 and 533-4.	MCDOT	Herz	2/01/2006 2/01/2006		Yes No Abstain
06-04	Reduce cement content requirement for RCP section 735.4(C)	Chandler	Fern	5/03/2006 8/04/2006		Yes No Abstain
06-05	Detail 120-2 SURVEY MARKER (FOR UNINCORPORATED AREAS OF COUNTY)	MCDOT	Herz	5/03/2006 5/16/2006		Yes No Abstain
06-06	Detail 426 DROP SEWER CONNECTIONS	Independent	Nebeker	7/5/2006 8/2/2006		Yes No Abstain
06-07	Detail 220 Add Mountable Curb & Gutter (Type M-24) and transition detail.	Scottsdale	Ramos	7/5/2006 8/2/2006		Yes No Abstain
06-08	Detail 220 Add Mountable Curb & Gutter (Type M-30) and transition detail.	Scottsdale	Ramos	7/5/2006 8/2/2006		Yes No Abstain
06-09	Detail 221 Replace Section A-A with View A-A Transition Detail.	Scottsdale	Ramos	7/5/2006 8/2/2006		Yes No Abstain

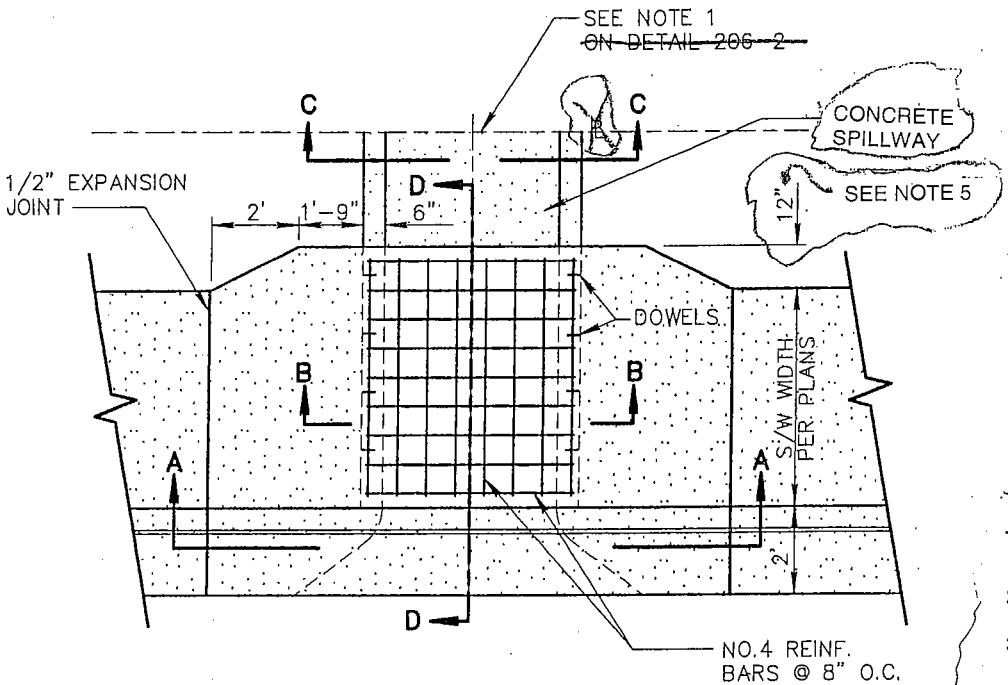
* Case was approved with verbal modificati



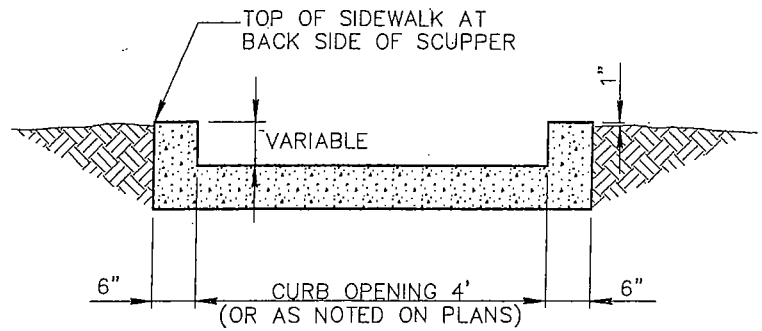
SECTION A–A



SECTION B–B



SCUPPER PLAN VIEW



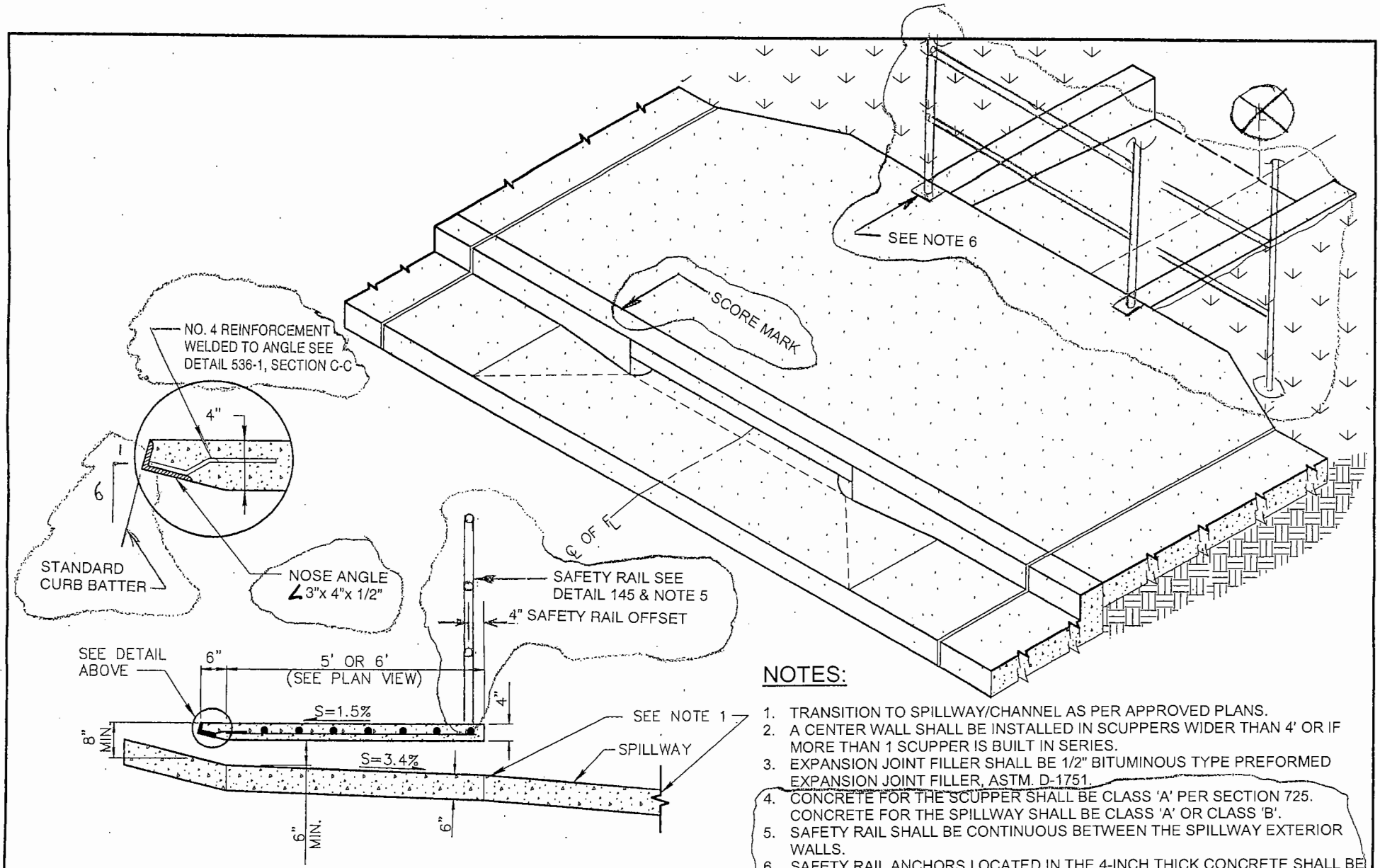
SECTION C–C
SPILLWAY

NOTES:

1. TRANSITION TO SPILLWAY/CHANNEL AS PER APPROVED PLANS.
2. A CENTER WALL SHALL BE INSTALLED IN SCUPPERS WIDER THAN 4' OR IF MORE THAN 1 SCUPPER IS BUILT IN SERIES.
3. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER, ASTM D-1751.
4. CONCRETE FOR THE SCUPPER SHALL BE CLASS 'A' PER SECTION 725. CONCRETE FOR THE SPILLWAY SHALL BE CLASS 'A' OR CLASS 'B'.
5. 12" OFFSET DISTANCE SHALL BE INCREASED TO 2'-6" FOR DESIGNATED BICYCLE PATHS.

DETAIL NO.			REVISED	DETAIL NO.
206–1	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	CONCRETE SCUPPER	01-01-2007	206–1

CASE 06-01
Revised 8/2/2006



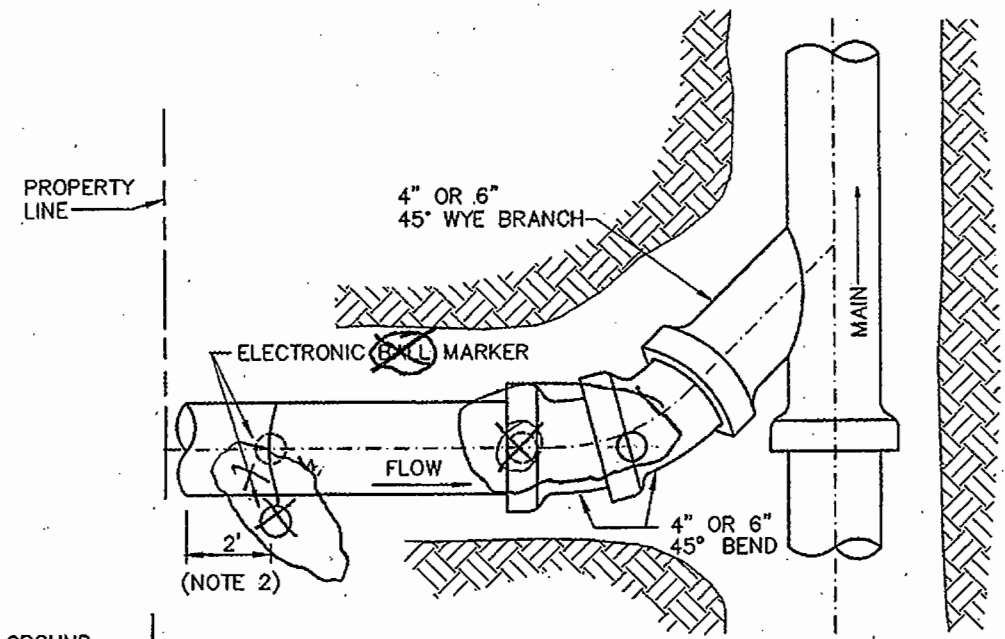
SECTION D–D

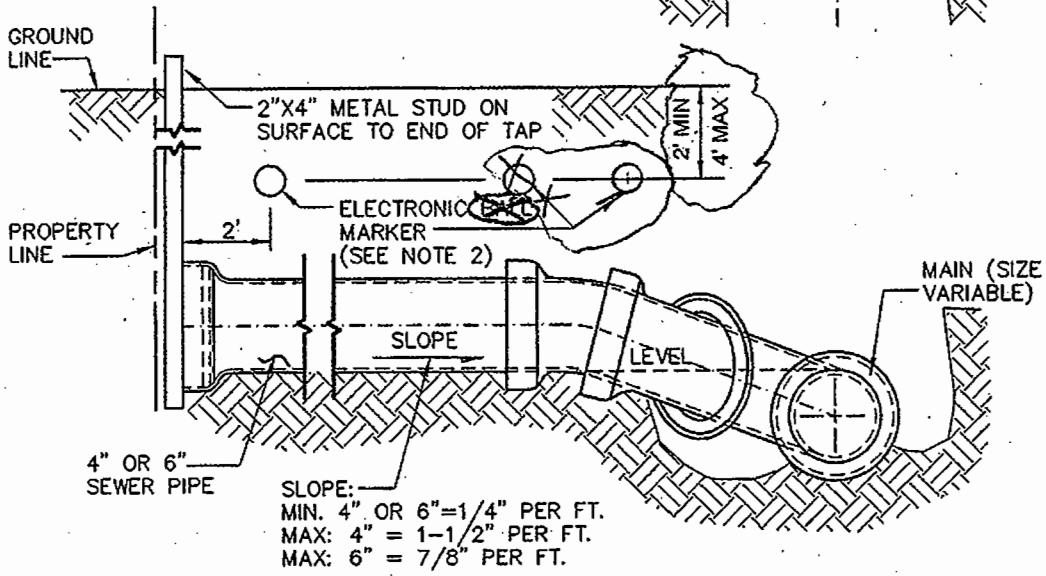
NOTES:

1. TRANSITION TO SPILLWAY/CHANNEL AS PER APPROVED PLANS.
2. A CENTER WALL SHALL BE INSTALLED IN SCUPPERS WIDER THAN 4' OR IF MORE THAN 1 SCUPPER IS BUILT IN SERIES.
3. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER, ASTM. D-1751.
4. CONCRETE FOR THE SCUPPER SHALL BE CLASS 'A' PER SECTION 725. CONCRETE FOR THE SPILLWAY SHALL BE CLASS 'A' OR CLASS 'B'.
5. SAFETY RAIL SHALL BE CONTINUOUS BETWEEN THE SPILLWAY EXTERIOR WALLS.
6. SAFETY RAIL ANCHORS LOCATED IN THE 4-INCH THICK CONCRETE SHALL BE – ANCHORAGE REQUIREMENTS TO BE PROVIDED AT THE NEXT COMMITTEE MEETING.

DETAIL NO.			REVISED	DETAIL NO.
206–2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	CONCRETE SCUPPER		206–2

CASE 06-01
Revised 8/10/2006





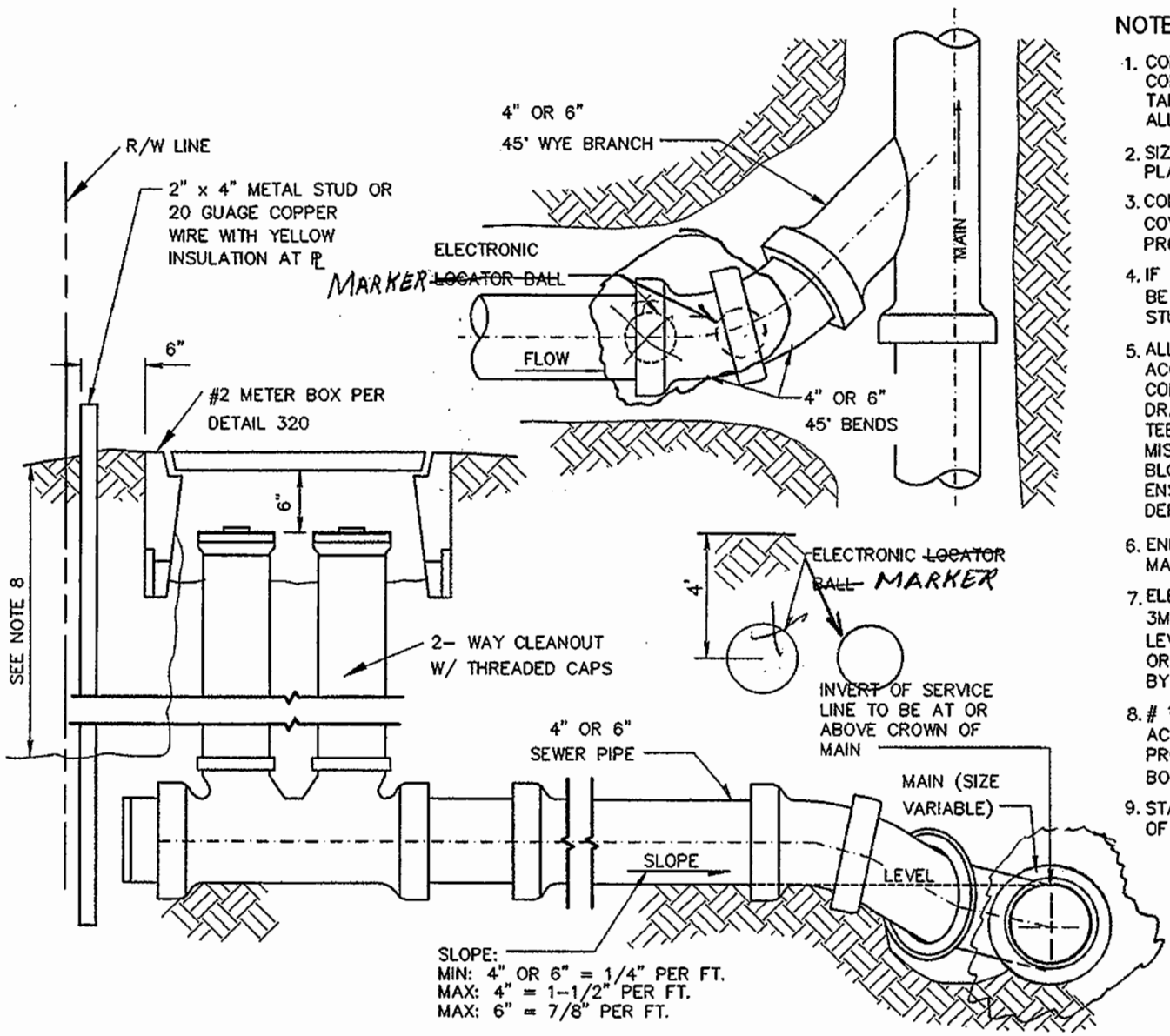
ELECTRONIC MARKER PLACEMENT

NOTES:

1. ELECTRONIC ~~BALL~~ MARKER SHALL BE A 3M MODEL 1424-XR/iD [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
2. MARKER SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, 2' BACK FROM THE END OF THE SEWER SERVICE STUB AND CINCH TIED TO PIPE OR ABOVE PIPE AS REQUIRED BY LOCAL AGENCY. AN ADDITIONAL MARKER SHALL BE INSTALLED AT EACH SERVICE STUB BEND.
3. ELECTRONIC MARKER SHALL BE RESTORED BY CONTRACTOR IF DISTURBED WHEN PRIVATE SERVICE LINE CONNECTION IS INSTALLED.
4. MARKER SHALL BE USED IN ADDITION TO A 2"x4" METAL STUD.
5. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
6. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
7. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
8. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTINGS JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT ~~DIRECTION~~ DEFLECTION.
9. END OF TAP TO BE SEALED AND MARKED AS NOTED.

DETAIL NO.			REVISED	DETAIL NO.
440-1	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	TYPE 'A' - SEWER BUILDING CONNECTION ELECTRONIC BALL MARKERS (STANDARD)	01-01-~~2006~~ 2007	440-1

CASE 06-02
2/1/2006
Revised 3/1/2006

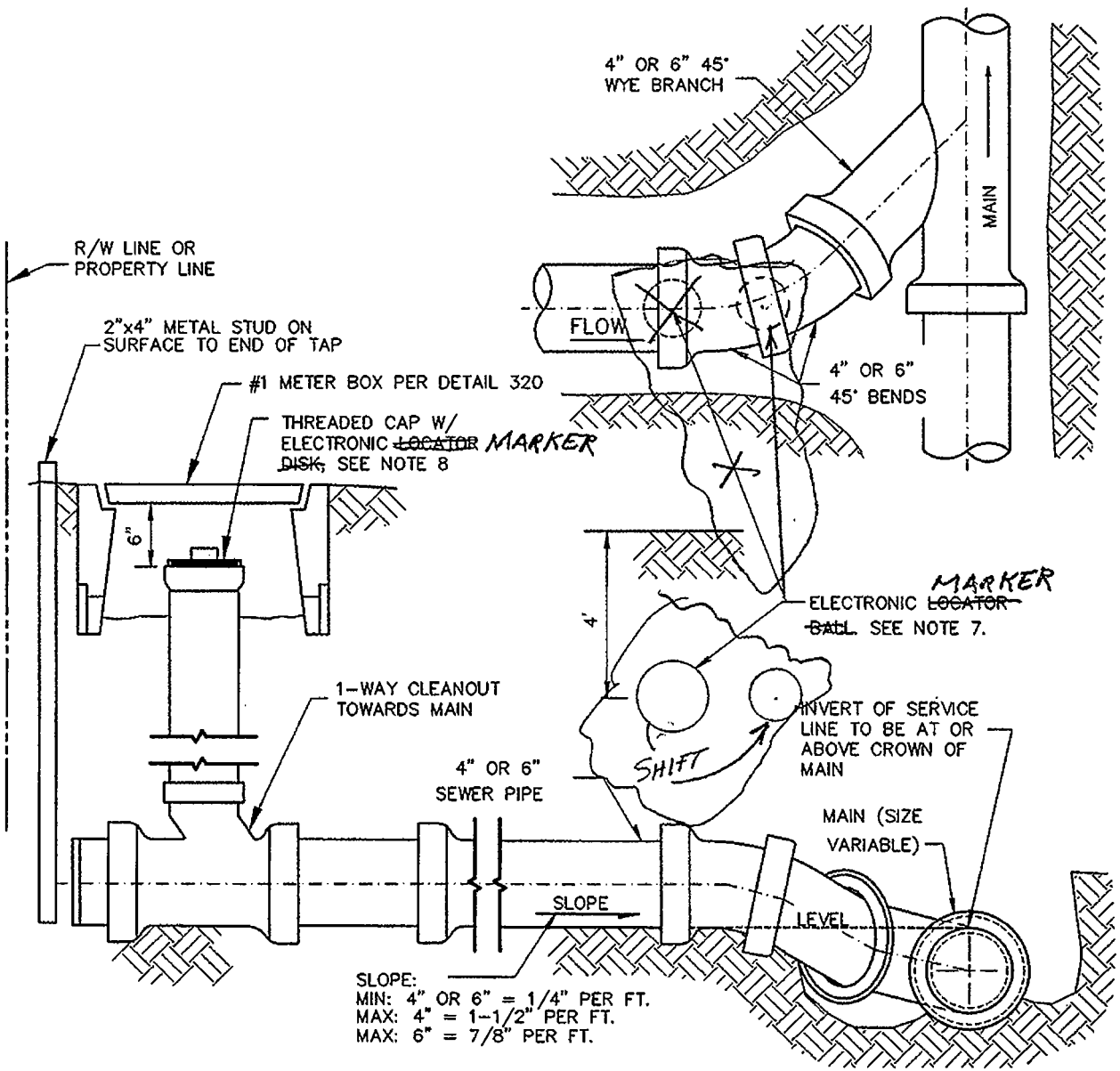


NOTES:

1. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
2. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
3. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
4. IF DEPTH REQUIRES, MINIMUM SLOPE CAN BE REDUCED TO 1/8" PER FOOT PROVIDED STUB IS STAKED TO GRADE.
5. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTING JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
6. END OF TAP TO BE SEALED AND MARKED AS NOTED.
7. ELECTRONIC ~~BALL~~ MARKER SHALL BE A 3M MODEL 1424-XR/ID [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
8. # 14 BARE COPPER LOCATOR WIRE ACCESSIBLE AT R/W AND AT PROPERTY OWNER CLEANOUT BOX NO GREATER THAN 4' DEEP.
9. STAMP OR WELD THE LETTER "S" ON LID OF METER BOX.

DETAIL NO.			REVISED	DETAIL NO.
440-2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	TYPE 'B' - SEWER BUILDING CONNECTION TWO-WAY CLEANOUT AND METER BOX AT R/W (WHEN SPECIFIED BY LOCAL AGENCY)	01-01-~~2006~~ 2007	440-2

CASE 06-02
2/1/2006



NOTES:

1. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
2. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
3. CONSTRUCT TAP AT MIN. SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
4. IF DEPTH REQUIRES, MINIMUM SLOPE CAN BE REDUCED TO 1/8" PER FOOT PROVIDED STUB IS STAKED TO GRADE.
5. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTING JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
6. END OF TAP TO BE SEALED AND MARKED.
7. ELECTRONIC ~~BALL~~ MARKER SHALL BE A 3M MODEL 1424-XR/iD [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
8. INSTALL RAISED 4" THREADED PLUG IN CLEANOUT INCORPORATING 3M MODEL 1414 ELECTRONIC DISC MARKER. GREEN IN COLOR. LOCATOR PLUG TO BE GPK PRODUCTS MODEL #228-0004 DM OR APPROVED EQUAL.
9. STAMP OR WELD THE LETTER "S" ON LID OF METER BOX.

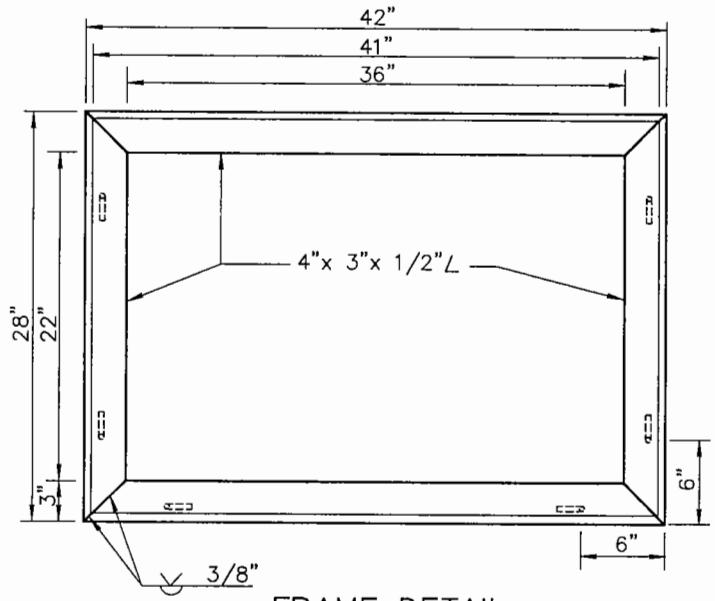
DETAIL NO.			REVISED	DETAIL NO.
440-3	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**TYPE 'C' - SEWER BUILDING CONNECTION ONE-WAY CLEANOUT AND METER BOX** (WHEN SPECIFIED BY LOCAL AGENCY)	01-01-~~2006~~ 2007	440-3

CASE 06-02
2/1/2006

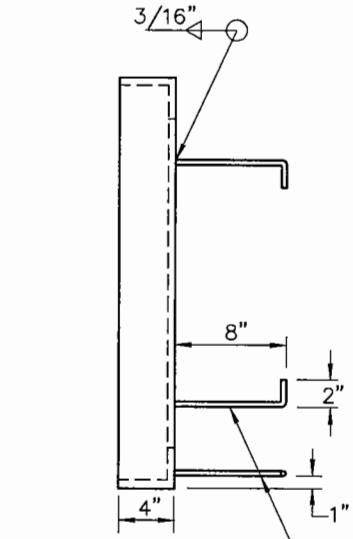
Case 06-02 Specification changes:

Section 615.6.2 Water Stops added the requirement for water stops on PVC pipes by revising the first sentence to read: Water stops will be required when connecting PVC or HDPE pipe to concrete structures, manholes, etc.

Section 615.7 SANITARY SEWER SERVICE TAPS changed the depth of electronic markers to coordinate with the depths as shown on Detail 440. The last sentence was revised to read: Electronic markers shall be placed at no greater depth than electronic locating devices can located them (typically ~~4'-8'~~2'-4').



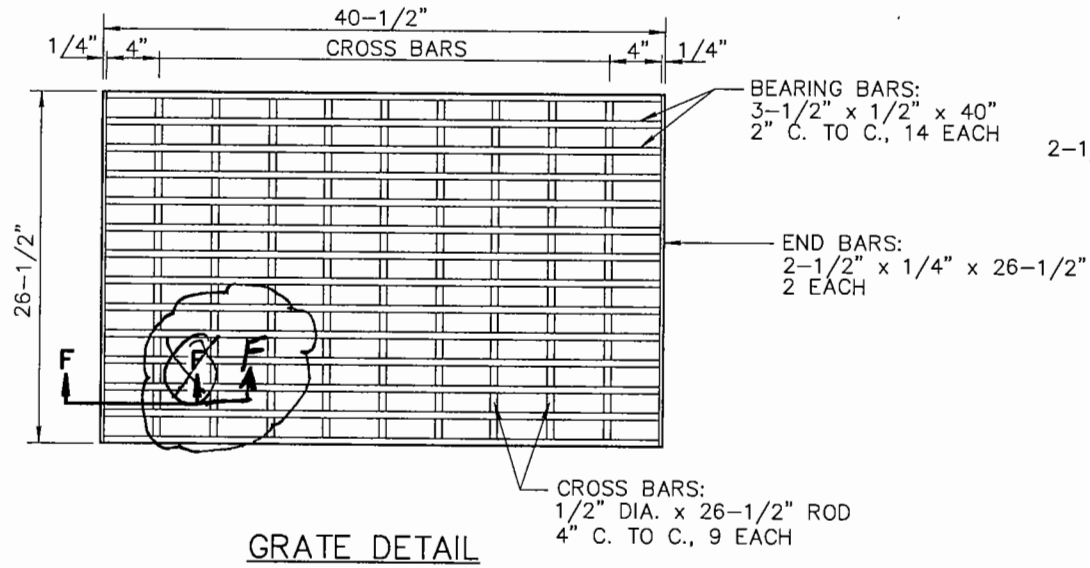
FRAME DETAIL



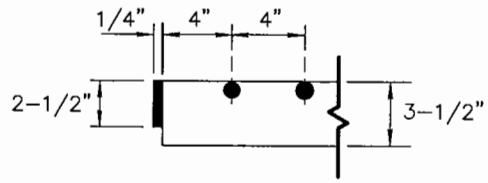
ANCHORS – TOTAL 6
SEE NOTE NO. 17

FRAME AND GRATE NOTES

14. FRAME AND GRATING SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS BEFORE DELIVERY.
15. ALL WELDING SHALL BE IN ACCORDANCE WITH STANDARD WELDING SPECIFICATIONS.
16. CROSS BARS AND END BARS MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTOR FORGED TO BEARING BARS.
17. ANCHORS SHALL BE 3/8" DIA. STEEL ROD, NO. 3 REBAR, 3/8" DIA. x 8" BOLTS OR 8" NELSON STUDS.
18. ALL PARTS SHALL BE OF STRUCTURAL GRADE STEEL.
19. ALL EXPOSED STEEL SHALL BE GALVANIZED OR PAINTED WITH ONE COAT #1 PAINT AND TWO FIELD COATS OF #10 PAINT.



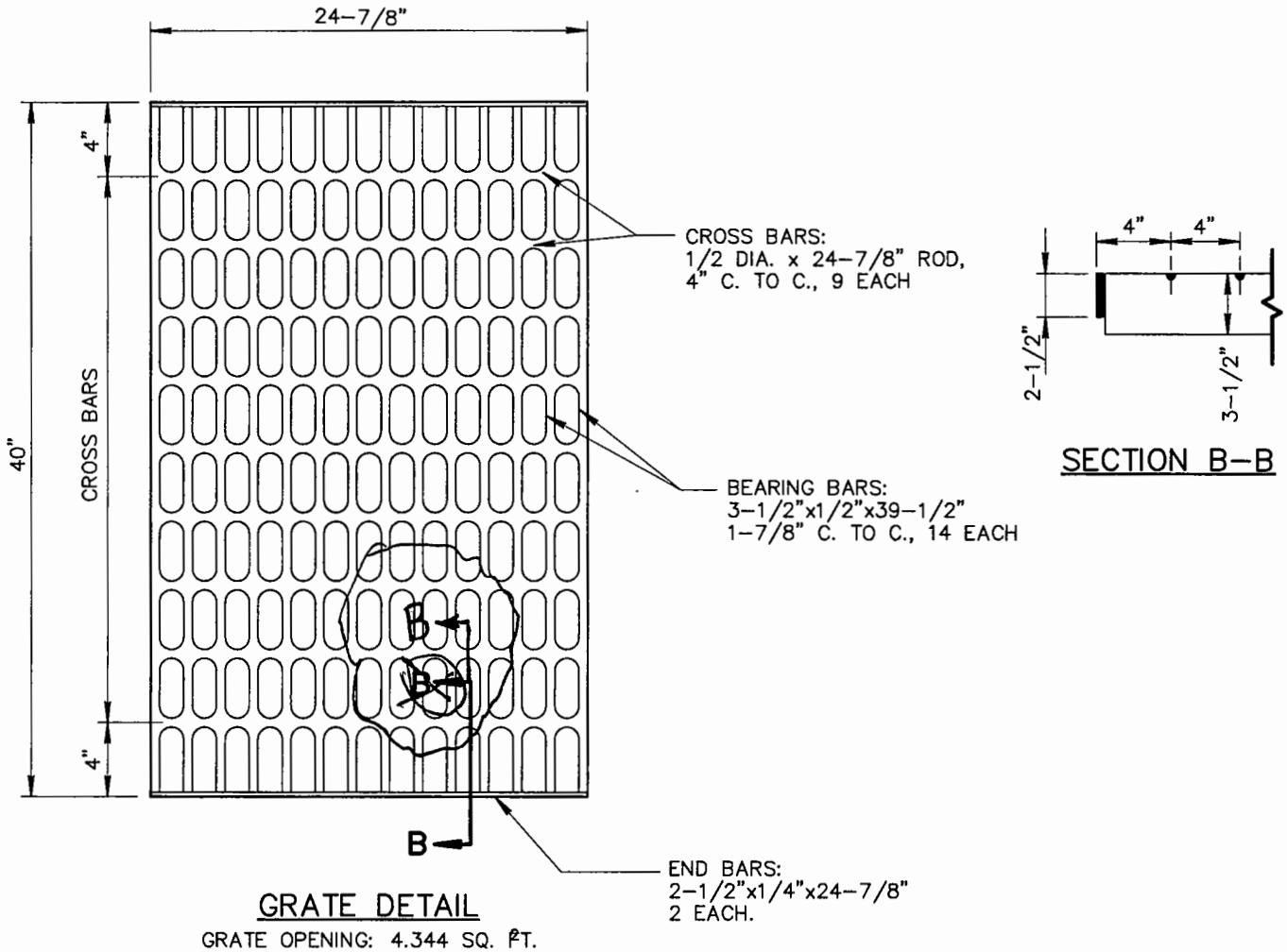
GRATE DETAIL



SECTION F–F

DETAIL NO.			REVISED	DETAIL NO.
533–3	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	FRAME AND GRATE FOR TYPE 'D' CATCH BASIN		533–3

CASE 06-03
2/1/2006



GRATE DETAIL

GRATE OPENING: 4.344 SQ. FT.

SECTION B-B

DETAIL NO.			REVISED	DETAIL NO.
533-4	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	7'-0" CURB OPENING CATCH BASIN TYPE 'D' - GRATE DETAILS	7-13-2000	533-4

CASE 06-03
2/1/2006

SECTION 735

(A) Portland Cement: Portland cement shall comply with ASTM C-150, Type II, low alkali. The pipe manufacturer shall supply a cement mill certificate in triplicate for each load of cement delivered, showing the specification, type, chemical analysis, and quantity. In lieu of the above, on stockpiled pipe the manufacturer shall certify that the type of cement used meets this specification. The pipe manufacturer shall also certify in writing that the cement content of the concrete complies with the specifications as to yield per cubic yard of concrete poured.

~~(B) Pozzolanic Materials: Pozzolanic materials shall conform to Subsection 725.2.1 and ASTM C-618. If an approved Pozzolanic material is used, 17.5 percent of the combined weight of Pozzolanic materials and portland cement shall be Pozzolanic material.~~

~~(C) Mixture: The proportion of portland cement or combination of portland cement and Pozzolanic material in the mixture shall not be less and 564 lbs. per cubic yard of concrete.~~

(B) Concrete Admixtures: The pipe manufacturer shall certify in writing that no calcium chloride or admixture containing calcium chloride has been used in the manufacture of the pipe. Other admixtures may be used if approved by the Engineer. The pipe manufacturer shall certify to the brand and chemical content of such admixtures used.

(C) Steel Reinforcement: The pipe manufacturer shall supply 3 copies of mill certificates showing heat numbers, chemical analysis, and physical tests on reinforcing steel. In lieu of the above, on stockpiled pipe the manufacturer shall certify that the type of steel used meets this specification. The number of steel wraps shall not be less than 5 percent below that shown on the shop drawing for any one pipe.

(D) Rubber Gaskets shall comply with Section 765.

735.5 MANUFACTURER'S QUALIFICATIONS AND EQUIPMENT REQUIREMENTS:

The manufacturer shall be competent to manufacture the type, size and quality of pipe; in addition, he shall have satisfactory curing and storage facilities, and satisfactory financial resources.

Calibration of Cement and Aggregate Scales: The pipe manufacturer shall make whatever alterations are necessary to his equipment to enable the Contracting Agency's Sealer or State Inspector of Weights and Measures to check, calibrate, and seal the aggregate and cement scales used in the pipe production.

735.6 CURING OF PIPE:

(A) Steam Curing: The manufacturer shall provide adequate steam plant, piping, enclosures, and other facilities for curing the pipe. The enclosures shall be such that the temperature is maintained continuously between 110 and 150°F.

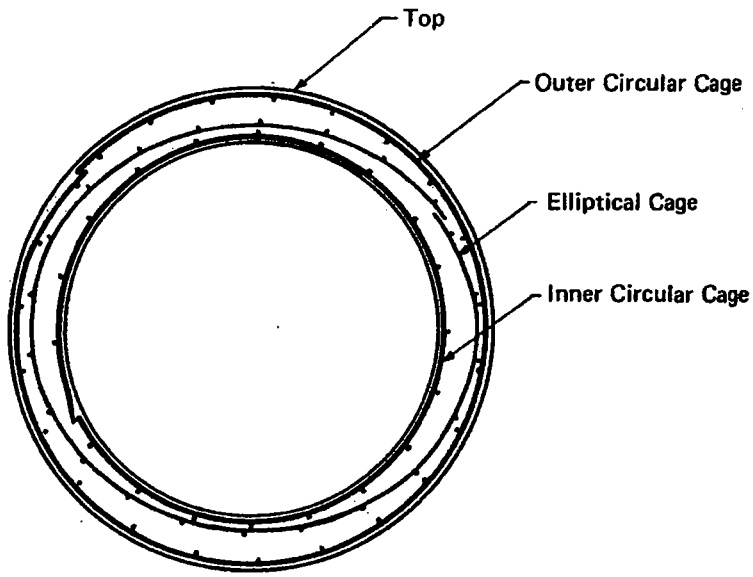
(B) Curing of the pipe shall not commence until the concrete has attained its initial set, but in any event not sooner than 1 hour nor later than 8 hours after placing of the concrete. Rate of rise of temperature shall not exceed 30° per hour.

(C) Water Curing: The pipe shall be kept moist during daylight hours. The pipe, including the ends, shall be covered with burlap for the first 3 days, except that, if the pipe is kept constantly and completely wet with fog sprays during the daylight hours, the burlap covering may be omitted. If the manufacturer fails to proceed immediately with the required water curing he shall seal the surfaces of the concrete, except joint surfaces that are to be grouted, with an approved, white pigmented sealing compound in accordance with Section 726.

735.7 TESTS AND ACCEPTANCE:

(A) Basis of Acceptance: The basis of acceptance for the reinforced concrete pipe shall be in accordance with ASTM C-76 by the method stated in the special provision and as amended herein. However, the purchaser may, at his option, make concrete cylinder tests for the purpose of determining release dates for shipment of the pipe and for his information in regard to general quality of the concrete.

(B) Segregation of Material: The slump of the concrete mix shall not exceed 4 inches so as to preclude excessive segregation of the materials used and shall be proportioned so that the result shall be a homogeneous concrete mixture of such quality that the pipe will conform to the tests and design requirements of these specifications.



NOTE 1—The total reinforcement area of the inner circular cage and the elliptical cage shall not be less than that specified for the inner cage in Tables 1-5.

NOTE 2—The total reinforcement area of the outer circular cage and the elliptical cage shall not be less than that specified for the outer cage in Tables 1-5.

FIG. 1 Triple Cage Reinforcement

option of the owner, the load to produce a 0.3-mm crack and the ultimate strength of the pipe; by such material tests as are required in 6.1, 6.2, and 6.4; by absorption tests on selected samples of concrete from the wall of the pipe; and by visual inspection of the finished pipe to determine its conformance with the accepted design and its freedom from defects.

5.1.2 *Acceptance on the Basis of Material Tests and Inspection of Manufactured Pipe for Defects and Imperfections*—Acceptability of the pipe in all diameters and classes produced in accordance with 7.1 or 7.2 shall be determined by the results of such material tests as are required in 6.1, 6.2, and 6.4; by crushing tests on concrete cores or cured concrete cylinders; by absorption tests on selected samples from the wall of the pipe; and by inspection of the finished pipe including amount and placement of reinforcement to determine its conformance with the accepted design and its freedom from defects.

5.1.3 When agreed upon between the owner and manufacturer, any portion or any combination of the tests itemized in 5.1.1 or 5.1.2 may form the basis of acceptance.

5.2 *Age for Acceptance*—Pipe shall be considered ready for acceptance when it conforms to the requirements as indicated by the specified tests.

6. Materials

6.1 *Reinforced Concrete*—The reinforced concrete shall consist of cementitious materials, mineral aggregates, and water, in which steel has been embedded in such a manner that the steel and concrete act together.

6.2 *Cementitious Materials*:

6.2.1 *Cement*—Cement shall conform to the requirements for portland cement of Specification C 150 or shall be portland blast-furnace slag cement or portland-pozzolan cement conforming to the requirements of Specification C 595, except that the pozzolan constituent in the Type IP portland-pozzolan cement shall be fly ash and shall not exceed 25 % by weight.

6.2.2 *Fly Ash*—Fly ash shall conform to the requirements of Class F or Class C of Specification C 618.

6.2.3 *Allowable Combinations of Cementitious Materials*—The combination of cementitious materials used in the concrete shall be one of the following:

6.2.3.1 Portland cement only,

6.2.3.2 Portland blast furnace slag cement only,

6.2.3.3 Portland pozzolan cement only, or

6.2.3.4 A combination of portland cement and fly ash.

6.3 *Aggregates*—Aggregates shall conform to Specification C 33 except that the requirement for gradation shall not apply.

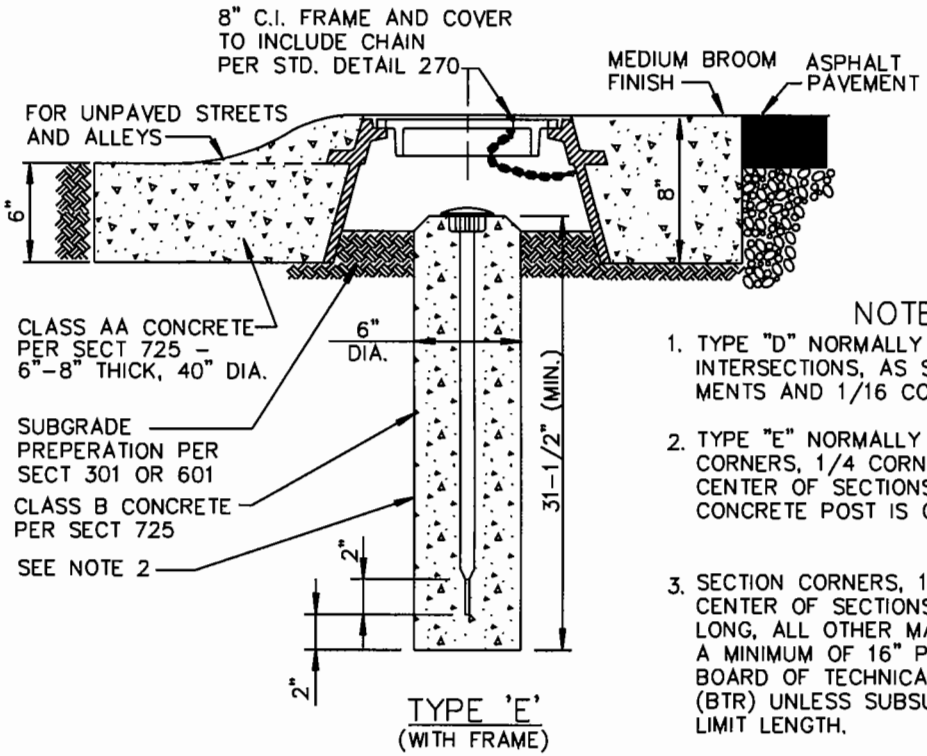
6.4 *Admixtures and Blends*—Admixtures and blends may be used with the approval of the owner.

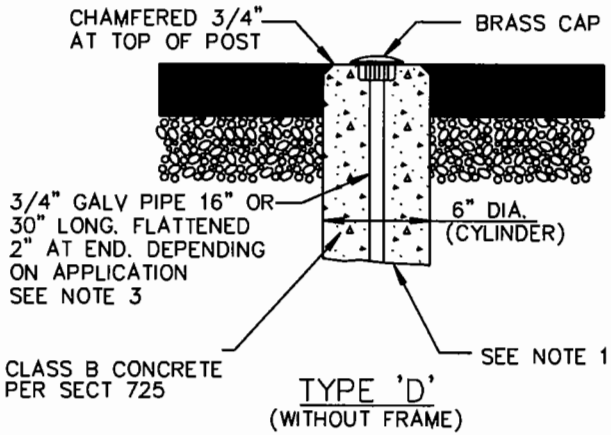
6.5 *Steel Reinforcement*—Reinforcement shall consist of wire conforming to Specification A 82 or Specification A 496 or of wire fabric conforming to Specification A 185 or Specification A 497 or of bars of Grade 300 steel conforming to Specification A 615/A 615M.

6.6 *Synthetic Fibers*—Collated fibrillated virgin polypropylene fibers may be used, at the manufacturer's option, in concrete pipe as a nonstructural manufacturing material. Only Type III synthetic fibers designed and manufactured specifically for use in concrete and conforming to the requirements of Specification C 1116 shall be accepted.

7. Design

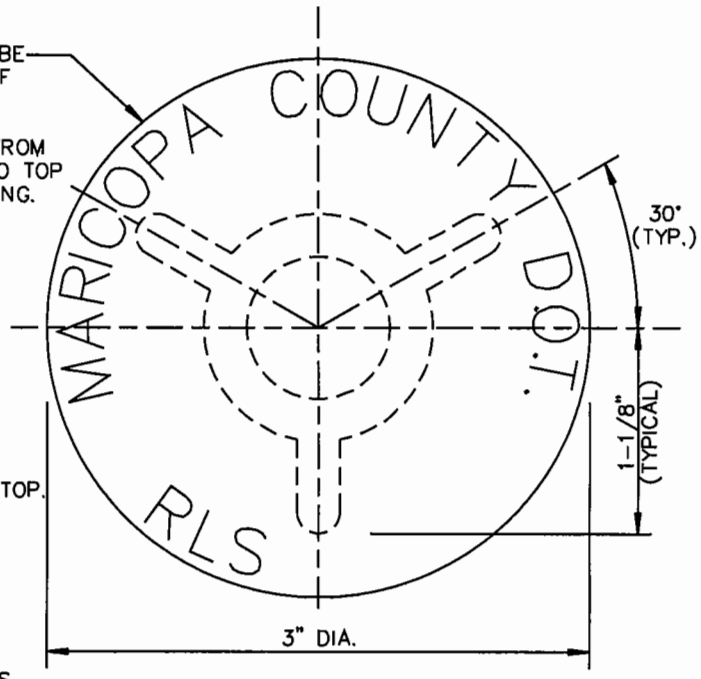
7.1 *Design Tables*—The diameter, wall thickness, compressive strength of the concrete, and the area of the circumferential reinforcement shall be as prescribed for Classes I to V in Tables 1-5, except as provided in 7.2.

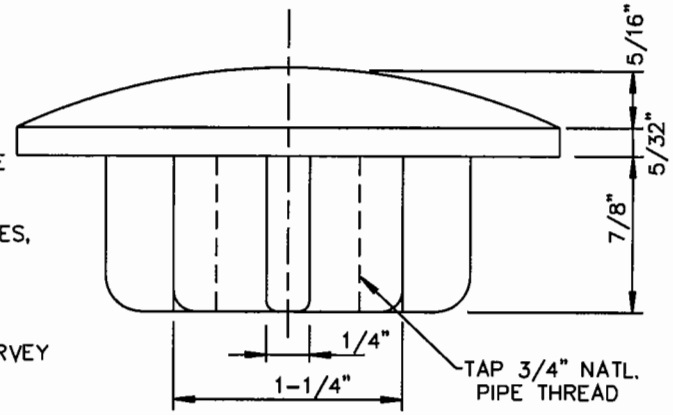




NOTES:

1. TYPE "D" NORMALLY USED AT STREET INTERSECTIONS, AS SUBDIVISION MONUMENTS AND 1/16 CORNERS.
2. TYPE "E" NORMALLY USED ON SECTION CORNERS, 1/4 CORNERS AND AT THE CENTER OF SECTIONS (PER ARS 33-103). CONCRETE POST IS CHAMFERED 3/4" AT TOP.
3. SECTION CORNERS, 1/4 CORNERS AND CENTER OF SECTIONS SHALL BE 30" LONG, ALL OTHER MARKERS SHALL BE A MINIMUM OF 16" PER THE ARIZONA BOARD OF TECHNICAL REGISTRATION (BTR) UNLESS SUBSURFACE OBSTRUCTIONS LIMIT LENGTH.
4. IN ALL CASES, THE POINT SURVEYED SHALL BE IDENTIFIED BY A PUNCH MARK AND IN ADDITION THE CAP SHALL BE STAMPED WITH THE REGISTERED LAND SURVEYOR (RLS) REGISTRATION NUMBER AND YEAR.
5. WHEN APPLICABLE, STAMP THE APPROPRIATE PUBLIC LAND MARKINGS PER CURRENT MANUAL OF INSTRUCTIONS FOR THE SURVEY OF THE PUBLIC LANDS OF THE UNITED STATES, PREPARED BY THE BUREAU OF LAND MANAGEMENT.
6. IN ALL CASES WHEN MONUMENTS ARE SET A CORNER RECORD OR RESULTS OF SURVEY SHALL BE RECORDED. (PER BTR)

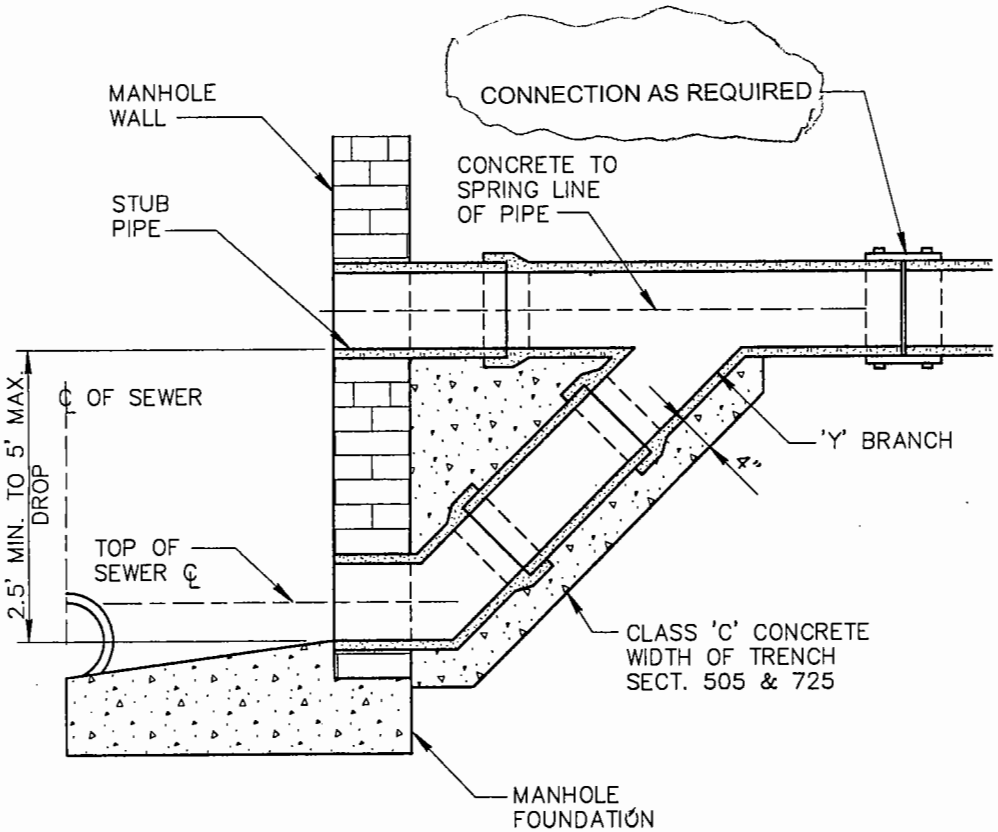




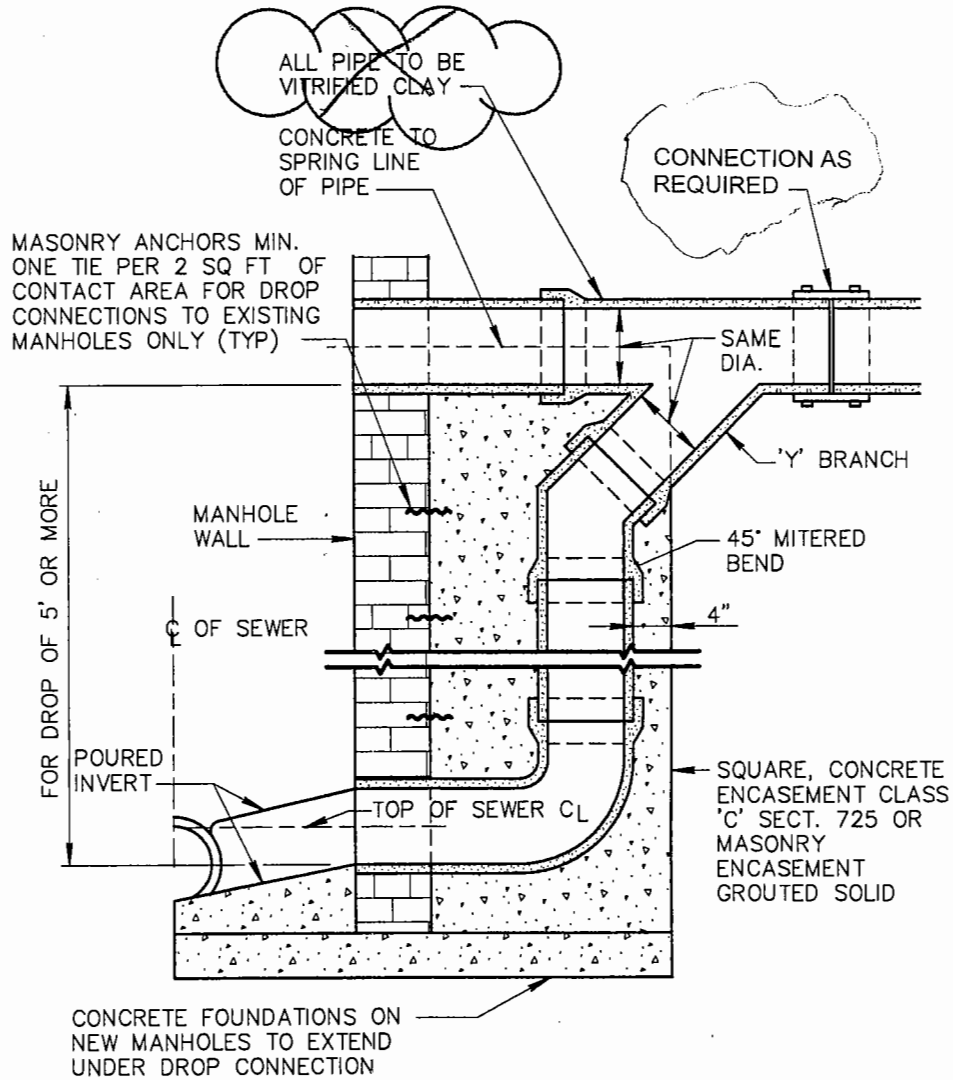
CAP DETAIL

DETAIL NO.				REVISED	DETAIL NO.
120-2	MARICOPA ASSOCIATION of GOVERNMENTS	STANDARD DETAIL ENGLISH	SURVEY MARKER (FOR UNINCORPORATED AREAS OF COUNTY)	05-16-2006	120-2

CASE 06-05



TYPE A
2.5' TO 5' DROP



TYPE B
5' OR MORE

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8/2/2006

DETAIL NO.			REVISED	DETAIL NO.
426	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**DROP SEWER CONNECTIONS**	01-01-2007	426

Case 06-06 Specification changes:

625.2 MATERIALS:

Unless otherwise shown on the plans or specified in the special provisions, materials to be used shall conform with the following:

Bricks for manholes Section 775.

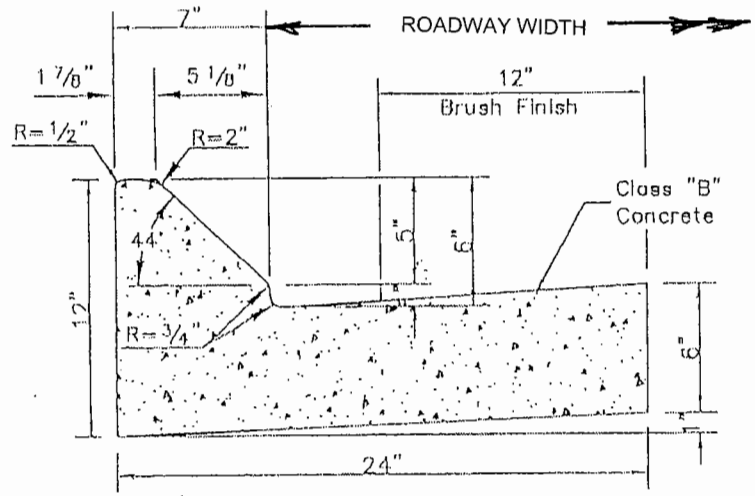
Cement mortar for manholes Class D, Section 776.

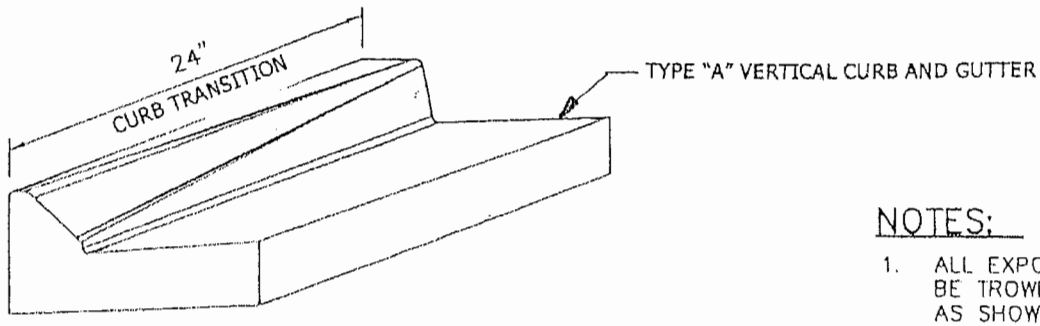
Concrete for manholes Class A, for drop sewer connection Class C, Section 725.

Pipe used in manholes or drop sewer connections shall comply with pipe requirements of Section 615~~743~~.

Manhole frame, cover and steps Section 787 and cast in accordance with standard details.

Plastic manhole steps, which conform to O.S.H.A. and A.S.T.M. C-487 requirements, and steel manhole steps, which are completely encapsulated in corrosion resistant rubber and conform to O.S.H.A. and A.S.T.M. C-478 requirements, may be substituted for cast iron manhole steps. The manufacturer shall furnish the Engineer a certification indicating conformance.





CURB TRANSITION TYPE 'E' TO TYPE 'A'

MOUNTABLE CURB AND GUTTER (TYPE E)

NOTES:

1. ALL EXPOSED SURFACES TO BE TROWEL FINISHED EXCEPT AS SHOWN. SEE SECT. 340.
2. CONTRACTION JOINT SPACING 10' MAXIMUM.
3. EXPANSION JOINTS AS PER SECT. 340.
4. CLASS 'B' CONCRETE PER 725.
5. When the adjacent pavement section slopes away from the gutter, the slope of the gutter pan shall match the pavement cross slope.

DETAIL NO.			REVISED	DETAIL NO.
220-1	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	CURB AND GUTTER TYPE E		220-2

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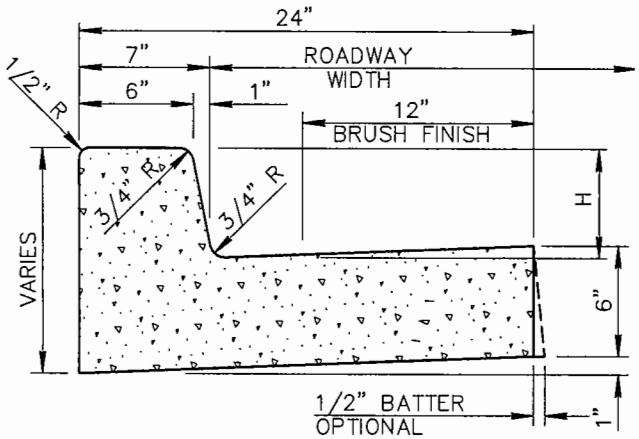
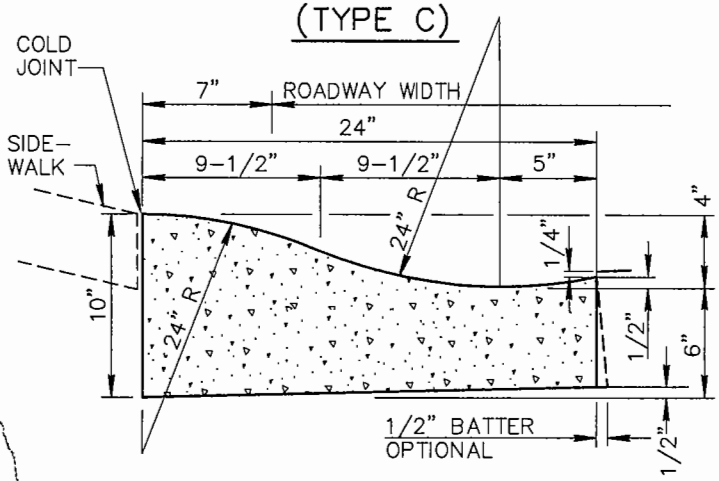
VERTICAL CURB AND GUTTER (TYPE A)



NOTES: (TYPE A)

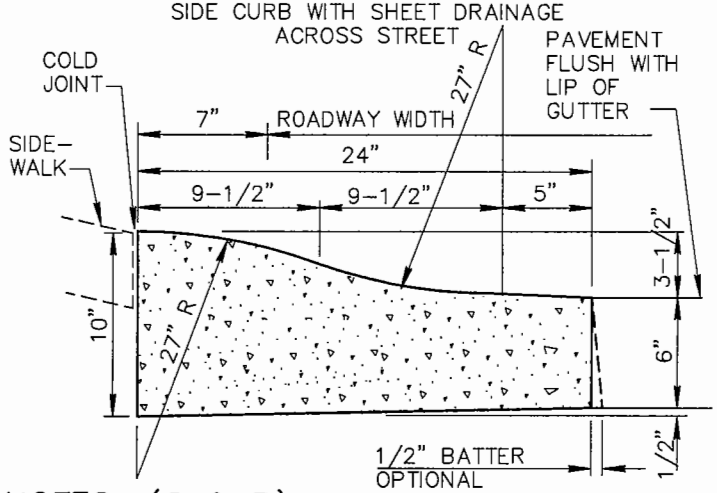
1. ALL EXPOSED SURFACES TO BE TROWEL FINISHED EXCEPT AS SHOWN. SEE SECT. 340.
2. H=6" OR AS SPECIFIED ON PLANS.
3. CONTRACTION JOINT SPACING 10' MAXIMUM.
4. EXPANSION JOINTS AS PER SECT. 340.
5. CLASS 'B' CONCRETE PER 725.
6. When the adjacent pavement section slopes away from the gutter, the slope of the gutter pan shall match the pavement cross slope.

ROLL CURB AND GUTTER (TYPE C)

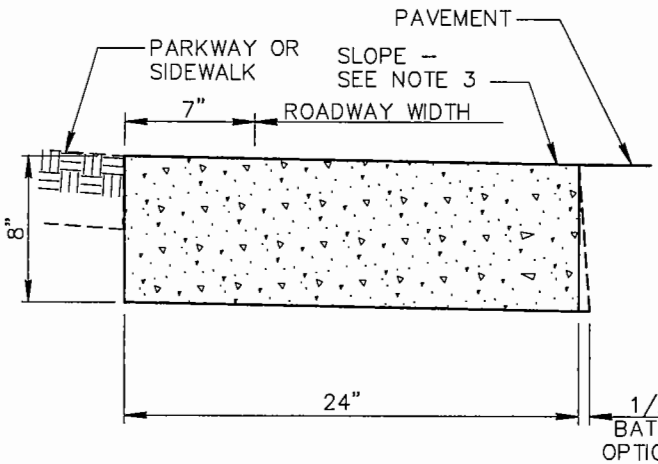


(TYPE D)

SPECIAL SECT. USE FOR HIGH SIDE CURB WITH SHEET DRAINAGE ACROSS STREET



RIBBON CURB (TYPE B)



NOTES: (TYPE B)

1. CONSTRUCT CURB AND INSTALL 1/2" MASTIC EXPANSION JOINTS, A.S.T.M. D-1751. SECT. 340.
2. BROOM FINISH ALL SURFACES.
3. RIBBON CURB MAY SLOPE TOWARDS PAVEMENT OR PARKWAY AS INDICATED ON PLANS.
4. CONTRACTION JOINT SPACING 10' MAXIMUM.
5. CONCRETE SHALL BE CLASS 'B' PER SECT. 725 AND INSTALLED PER SECT. 505.

NOTES: (C & D)

1. ALL WORK AND MATERIALS SHALL CONFORM TO SECT. 304, 505 AND 725. BROOM FINISH TO EXPOSED SURFACE.
2. CONTRACTION JOINT SPACING 10' MAXIMUM.
3. EXPANSION JOINTS AS PER SECT. 340.
4. CLASS 'B' CONCRETE PER 725.

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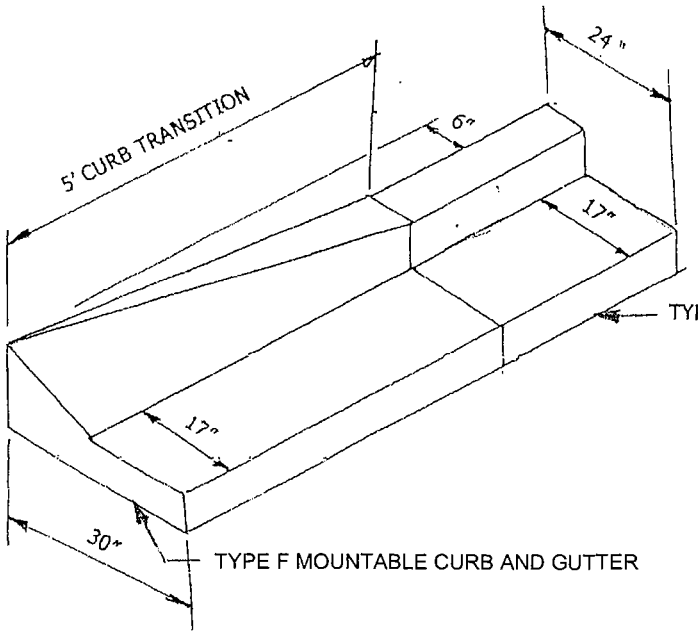
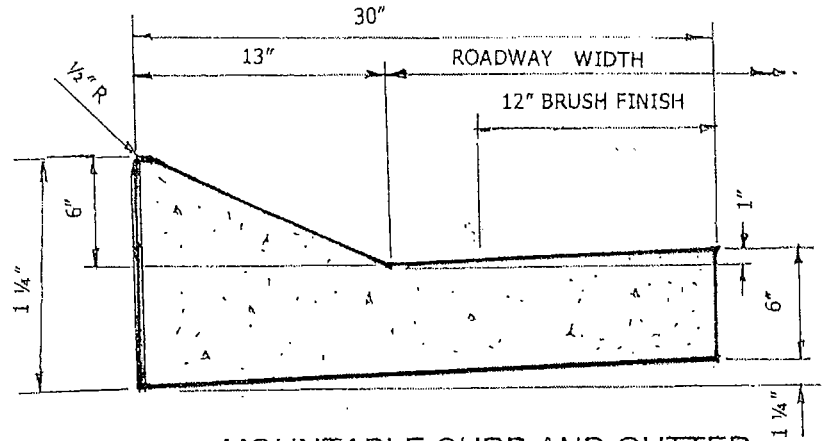
8/2/2006
CASE 06-08
8/2/2006

DETAIL NO.			REVISED	DETAIL NO.
220	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**CURB AND GUTTER TYPES A, B, C AND D**		220-1





MOUNTABLE CURB AND GUTTER
(TYPE F)

CURB TRANSITION TYPE 'F' TO TYPE 'A'

NOTES:

1. ALL EXPOSED SURFACES TO BE TROWEL FINISHED EXCEPT AS SHOWN. SEE SECT. 340.
2. CONTRACTION JOINT SPACING 10' MAXIMUM.
3. EXPANSION JOINTS AS PER SECT. 340.
4. CLASS 'B' CONCRETE PER 725.
5. When the adjacent pavement section slopes away from the gutter, the slope of the gutter pan shall match the pavement cross slope.

DETAIL NO.			REVISED	DETAIL NO.
220-2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	CURB AND GUTTER TYPE F		220-2

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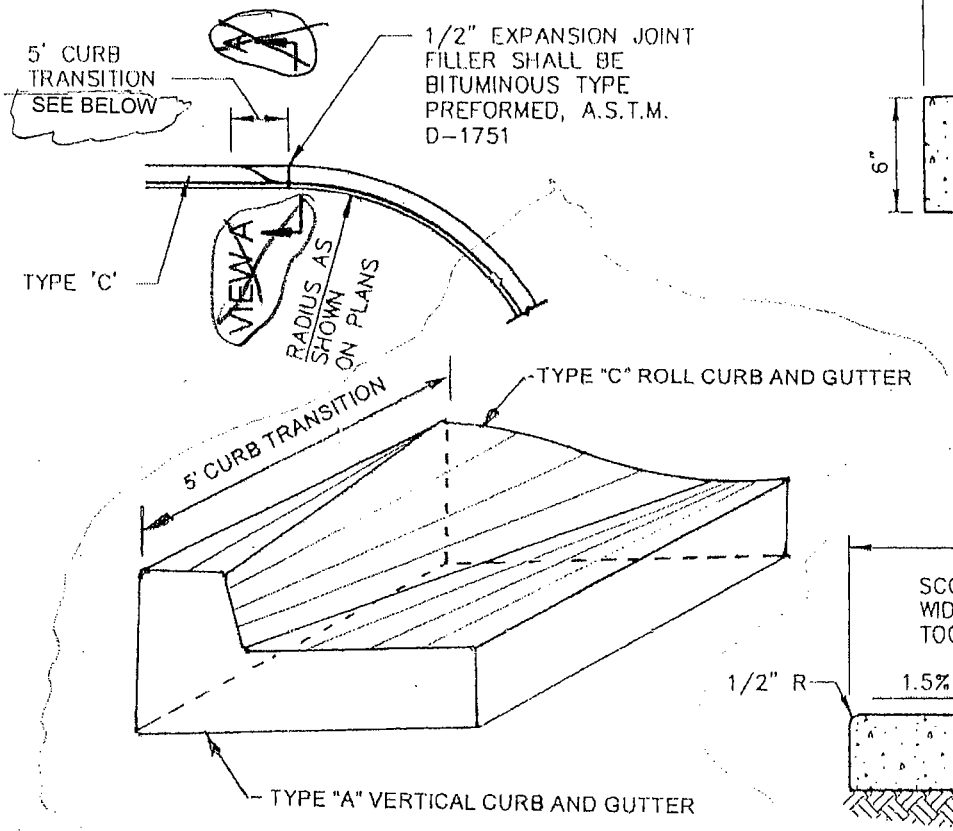
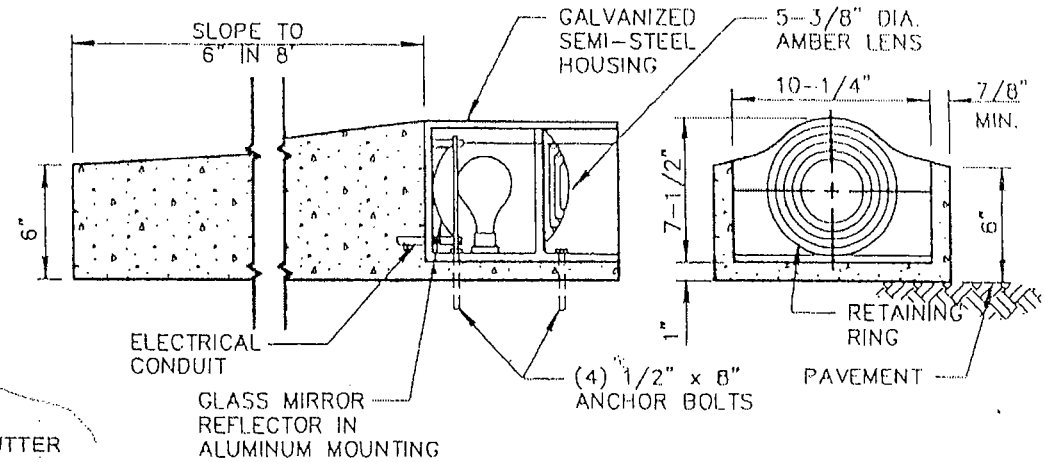
8/2/2006

CURB AND GUTTER TRANSITION

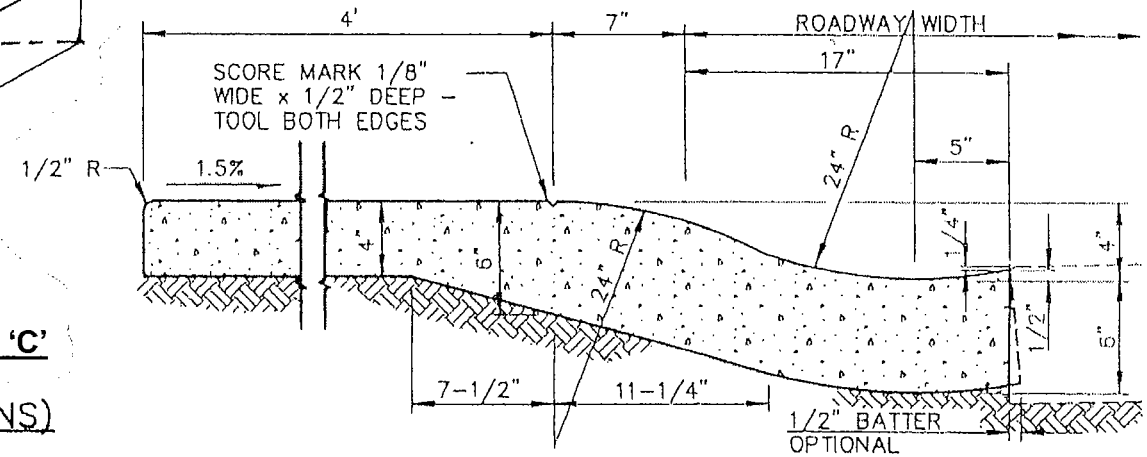


CURB TRANSITION TYPE 'A' TO TYPE 'C'

CURB WARNING BEACON



INTEGRAL ROLL CURB, GUTTER AND SIDEWALK



NOTES: (CURB AND GUTTER TRANSITIONS)

1. THE CURB TRANSITION WILL BE PAID FOR AS TYPE 'C'. WHEN A PROJECT CONSISTS OF TYPE 'C' CURB AND GUTTER THROUGHOUT, THE ENTIRE RETURN SHALL BE MEASURED AND PAID FOR AS TYPE 'A'.
2. WHERE PROPOSED CONSTRUCTION IS TO BE CONNECTED TO EXISTING CURB AND GUTTER, THE TRANSITION SHALL BE INDICATED ON PLANS.
3. CLASS 'B' CONCRETE PER SECT. 725.

NOTES:

1. CONCRETE TO BE MONOLITHIC POUR. EXPOSED SURFACE FINISH AS PER SIDEWALK AND GUTTER DETAIL.
2. CONTRACTION JOINT SPACING 16' MAXIMUM.
3. EXPANSION JOINTS PER SECT. 340.
4. CLASS 'B' CONCRETE PER SECT. 725.

CASE 06-09
8/2/2006

DETAIL NO.				REVISED	DETAIL NO.
221	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	CURB AND GUTTER (TRANSITION, INTEGRAL & WARNING BEACON)			221